AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of the claims in the Application. With reference to the listing it is noted that, herewith, claims 2, 3, 8, 11, 13, 14, 19, and 20 are amended, and claims 6 and 10 are canceled without prejudice or disclaimer. No new matter has been added.

Listing of Claims

1. (Cancelled)

2. (Currently Amended) A photoelectric conversion device comprising:

a photoelectric converter including a plurality of photoelectric conversion elements each of which is constructed by a plurality of pixels on a semiconductor substrate;

a plurality of storage elements arranged on the same semiconductor substrate, each storing predetermined accumulation period control information employable in controlling a corresponding one of said photoelectric conversion elements, wherein each of said plurality of storage elements includes rewritable memory of which accumulation period control information employable in controlling an ~~operation~~ accumulation period of said photoelectric conversion element is rewritable by a predetermined program stored in a program memory; and

a controller, wherein said controller controls charge accumulation period of said photoelectric converter on the basis of the accumulation period control information stored in said storage elements.

3. (Currently Amended) The device according to claim 2, wherein said photoelectric converter

further includes a monitor, wherein said monitor monitors an accumulated charge state in said photoelectric conversion element, and

said controller includes a selector, wherein said selector selects an arbitrary one of a plurality of pieces of status information on the basis of the accumulation period control information stored in said storage elements, and a comparator, wherein said comparator compares an output from said monitor with the status information selected by said selector, and controls the charge accumulation of said photoelectric converter on the basis of a comparison result of said comparator.

4. (Withdrawn) A photoelectric conversion device comprising: photoelectric conversion means including a photoelectric conversion element constructed by a plurality of pixels, and storage means for storing predetermined control information;

read means for amplifying an accumulated charge signal of said photoelectric conversion element with a predetermined amplification factor, and reading out the amplified signal; and

control means for controlling the amplification factor of said read means on the basis of the control information stored in said storage means.

5. (Withdrawn) The device according to claim 4, wherein said photoelectric conversion means further includes monitor means for monitoring an accumulated charge state in said photoelectric conversion element, and

said control means includes selection means for selecting an arbitrary one of a plurality of pieces of status information on the basis of the control information stored in said storage means, and comparison means for comparing an output from said monitor means with the status

information selected by said selection means, and controls the amplification factor of said read means on the basis of a comparison result of said comparison means.

6. (Canceled)

7. (Previously Presented) The device according to claim 3, wherein said monitor monitors and outputs information based on a maximum accumulated charge amount of said photoelectric conversion element.

8. (Currently Amended) The device according to claim 3, wherein said controller stores the status information selected by said selector in said storage elements as the accumulation period control information.

9. (Previously Presented) The device according to claim 2, wherein said photoelectric converter is constructed by forming said photoelectric conversion element and storage elements on a single substrate.

10. (Canceled)

11. (Currently Amended) The device according to claim 3, wherein said controller includes a circuit, wherein said circuit determines predetermined information on the basis of said output from said monitor, and stores the information determined by said circuit in said storage elements as the accumulation period control information.

12. (Canceled)

13. (Currently Amended) The method according to claim 14, further comprising:

monitoring and outputting an accumulated charge state in said photoelectric conversion element;

selecting an arbitrary one of a plurality of pieces of status information on the basis of the accumulation period control information read out from said memory;

comparing the outputted accumulated charge state with the selected status information; and

controlling the charge accumulation of said photoelectric conversion element on the basis of a comparison result of said comparing.

14. (Currently Amended) A method of controlling charge accumulation of a plurality of photoelectric conversion elements each of which is constructed by a plurality of pixels, comprising:

reading out respective accumulation period control information from a plurality of memories each of which is corresponding to respective one of said photoelectric conversion elements, and respectively controlling the charge accumulation period of each of said photoelectric conversion elements on the basis of respective accumulation period control information, wherein charge accumulation ~~operations~~ period of a plurality of photoelectric converters are controlled on the basis of accumulation period control information in a plurality of memories; and

rewriting respective accumulation period control information employable in controlling

an ~~operation~~ accumulation period of said photoelectric conversion element in said plurality of memories by a program stored in a program memory.

15. (Withdrawn) A method of controlling operation for reading out an accumulated charge signal from a photoelectric conversion element constructed by a plurality of pixels while applying the signal with a predetermined amplification factor, comprising:

the control step of reading out control information from a memory corresponding to said photoelectric conversion element, and controlling the amplification factor on the basis of the control information.

16. (Withdrawn) The method according to claim 15, wherein the control step includes:

the monitor output step of monitoring and outputting an accumulated charge state in said photoelectric conversion element;

the selection step of selecting an arbitrary one of a plurality of pieces of status information on the basis of the control information read out from said memory;

the comparison step of comparing an output in the monitor output step with the status information selected in the selection step; and

the amplification factor control step of controlling the amplification factor on the basis of a comparison result in the comparison step.

17. (Withdrawn) The method according to claim 15, wherein the control step includes the step of controlling the amplification factors of accumulated charge signals read out from a plurality of photoelectric conversion means equivalent to said photoelectric conversion means on the basis of

control information in a plurality of memories equivalent to said memory.

18. (Previously Presented) The method according to claim 13, further comprising monitoring and outputting information based on a maximum accumulated charge amount of said photoelectric conversion element.

19. (Currently Amended) The method according to claim 13, further comprising storing the selected status information in said memory as the accumulation period control information.

20. (Currently Amended) The method according to claim 14, further comprising determining predetermined information on the basis of an accumulated charge signal read out from said photoelectric conversion element, and storing the determined information in said memory as the accumulation period control information.

21. (Previously Presented) A focus detection device including a photoelectric conversion device of claim 2.

22. (Previously Presented) A storage medium which computer-readably stores program code corresponding to a control method of claim 14.

23. (Withdrawn) A photoelectric conversion device comprising:

a plurality of photoelectric conversion elements, which are divided into a plurality of regions;

accumulation start means for making said photoelectric conversion elements in the

plurality of regions start accumulation;

monitoring means for monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn;

determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end; and

accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output,

wherein said monitoring means monitors and outputs the accumulation states in the respective regions at a predetermined time interval in turn, and makes the predetermined time interval different between a timing immediately after the beginning of the accumulation and a timing a certain period of time after the beginning of the accumulation.

24. (Withdrawn) The device according to claim 23, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

25. (Withdrawn) The device according to claim 23, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

26. (Withdrawn) The device according to claim 23, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion

elements included in each region.

27. (Withdrawn) The device according to claim 23, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

28. (Withdrawn) The device according to claim 23, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.

29. (Withdrawn) A focus detection device comprising:

a plurality of photoelectric conversion elements, which are divided into a plurality of regions;

accumulation start means for making said photoelectric conversion elements in the plurality of regions start accumulation;

monitoring means for monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn;

determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end;

accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output;

pixel read means for reading out pixels of the respective divided regions; and

detection means for performing focus detection of an object by calculating pixel signals read out by said pixel read means,

wherein said monitoring means monitors and outputs the accumulation states in the respective regions at a predetermined time interval in turn, and makes the predetermined time interval different between a timing immediately after the beginning of the accumulation and a timing a certain period of time after the beginning of the accumulation.

30. (Withdrawn) The device according to claim 29, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

31. (Withdrawn) The device according to claim 29, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

32. (Withdrawn) The device according to claim 29, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion elements included in each region.

33. (Withdrawn) The device according to claim 29, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

34. (Withdrawn) The device according to claim 29, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.

35. (Withdrawn) A method of controlling a photoelectric conversion device which comprises a plurality of photoelectric conversion elements, which are divided into a plurality of regions, accumulation start means for making said photoelectric conversion elements in the plurality of regions start accumulation, monitoring means for monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn, determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end, and accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output,

wherein said monitoring means monitors and outputs the accumulation states in the respective regions at a predetermined time interval in turn, and makes the predetermined time interval different between a timing immediately after the beginning of the accumulation and a timing a certain period of time after the beginning of the accumulation.

36. (Withdrawn) The method according to claim 35, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

37. (Withdrawn) The method according to claim 35, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

38. (Withdrawn) The method according to claim 35, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion

elements included in each region.

39. (Withdrawn) The method according to claim 35, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

40. (Withdrawn) The method according to claim 35, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.

41. (Withdrawn) A method of controlling a focus detection device which comprises a plurality of photoelectric conversion elements, which are divided into a plurality of regions, accumulation start means for making said photoelectric conversion elements in the plurality of regions start accumulation, monitoring means for monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn, determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end, accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output, pixel read means for reading out pixels of the respective divided regions, and detection means for performing focus detection of object by calculating pixel signals read out by said pixel read means,

wherein said monitoring means monitors and outputs the accumulation states in the respective regions at a predetermined time interval in turn, and makes the predetermined time interval different between a timing immediately after the beginning of the accumulation and a

timing a certain period of time after the beginning of the accumulation.

42. (Withdrawn) The method according to claim 41, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

43. (Withdrawn) The method according to claim 41, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

44. (Withdrawn) The method according to claim 41, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion elements included in each region.

45. (Withdrawn) The method according to claim 41, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

46. (Withdrawn) The method according to claim 41, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.

47. (Withdrawn) A storage medium that stores a control program for controlling a photoelectric conversion device which comprises a plurality of photoelectric conversion elements, which are divided into a plurality of regions, accumulation start means for making said photoelectric conversion elements in the plurality of regions start accumulation, monitoring means for

monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn, determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end, and accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output, said control program having:

a code of the step of controlling said monitoring means to monitor and output the accumulation states in the respective regions at a predetermined time interval in turn, and to make the predetermined time interval different between a timing immediately after the beginning of the accumulation and a timing a certain period of time after the beginning of the accumulation.

48. (Withdrawn) The medium according to claim 47, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

49. (Withdrawn) The medium according to claim 47, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

50. (Withdrawn) The medium according to claim 47, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion elements included in each region.

51. (Withdrawn) The medium according to claim 47, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

52. (Withdrawn) The medium according to claim 47, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.

53. (Withdrawn) A storage medium that stores a control program for controlling a focus detection device which comprises a plurality of photoelectric conversion elements, which are divided into a plurality of regions, accumulation start means for making said photoelectric conversion elements in the plurality of regions start accumulation, monitoring means for monitoring and outputting accumulation states of the photoelectric conversion elements in the respective regions in turn, determination means for comparing each of the monitor outputs output in turn with a predetermined value to determine if the accumulation of the photoelectric conversion element in the region corresponding to the monitor output is to end, accumulation end means for, when said determination means determines that the accumulation is to end, ending the accumulation of the photoelectric conversion element in the region corresponding to the monitor output, pixel read means for reading out pixels of the respective divided regions, and detection means for performing focus detection of an object by calculating pixel signals read out by said pixel read means, said control program having:

a code of the step of controlling said monitoring means to monitor and output the accumulation states in the respective regions at a predetermined time interval in turn, and to make the predetermined time interval different between a timing immediately after the beginning of the accumulation and a timing a certain period of time after the beginning of the

accumulation.

54. (Withdrawn) The medium according to claim 53, wherein a plurality of photoelectric conversion elements equivalent to said photoelectric conversion elements are located in each of the plurality of regions.

55. (Withdrawn) The medium according to claim 53, wherein said plurality of photoelectric conversion elements construct an area sensor having a continuous, two-dimensional distribution.

56. (Withdrawn) The medium according to claim 53, wherein the monitor output corresponds to a signal based on a maximum accumulated charge amount of the photoelectric conversion elements included in each region.

57. (Withdrawn) The medium according to claim 53, wherein said monitoring means makes the predetermined time interval different by inserting a wait time at a timing of the monitor output.

58. (Withdrawn) The medium according to claim 53, wherein said monitoring means makes the predetermined time interval different by changing a clock signal for controlling a timing of the monitor output.